

**MONTANA FISH, WILDLIFE AND PARKS
HUNTING SEASON/QUOTA CHANGE SUPPORTING INFORMATION**

Species: Gray Wolf
Region: Statewide/all Regions
Year: 2010 Hunting Season

1. Describe the proposed quota change and provide a summary of prior history.

FWP proposes two quota alternatives. Both proposed quotas are matched to the same proposed season structure (dates, boundaries, means of take, etc.). While a single quota proposal is more typical, the relatively short management history and unique presence of recovery criteria for wolves add uncertainty and required objectives in a manner different from other species at this time. Given this, FWP recognizes some value associated with two alternatives inserted into the public Commission process. The relative comparison of this approach affords all parties enhanced appreciation for the pros, cons and consequences associated with different decisions. In no way does the presence of two alternatives preclude the public's opportunity to advocate one or the other and Commission process allows the Commission to move forward with only one or more alternatives that may or may not differ from the alternatives proposed here.

QUOTA ALTERNATIVE 186

A 2010 statewide wolf quota of 186, partitioned into fourteen individual WMUs shown in Table 1 (map as Appendix II) is proposed as one option. FWP also proposes quotas or subquotas in wolf management unit (WMU) 150 and in deer/elk hunting districts (HDs) 280 and 316 where an early season back country rifle season is proposed. An archery-only season in all WMUs with an allocated harvest potential not to exceed 20% of the WMU quota or subquota is also proposed.

A harvest equal to this proposed quota level of 186 is predicted to reduce the year-end minimum total pack-living wolf numbers approximately 13% from 506 in 2009 to a predicted 439 in 2010 (Table 3). These numbers of pack-living wolves do not include lone wolves that are also recorded in year-end minimums.

QUOTA ALTERNATIVE 216

A 2010 statewide wolf quota of 216, partitioned into fourteen individual WMUs shown in Table 1 (map as Appendix II) is proposed as a second option. FWP also proposes quotas or subquotas in wolf management unit (WMU) 150 and in deer/elk hunting districts (HDs) 280 and 316 where an early season back country rifle season is proposed. An archery-only season in all WMUs with an allocated harvest potential not to exceed 20% of the WMU quota or subquota is also proposed.

A harvest equal to this proposed quota level of 216 is predicted to reduce the year-end minimum total pack-living wolf numbers approximately 20% from 506 in 2009 to a predicted 403 in 2010 (Table 4). These numbers of pack-living wolves do not include lone wolves that are also recorded in total year-end minimums.

Quotas
Season dates
Hunting District Boundaries
Mandatory reporting

APPLICABLE TO BOTH QUOTA ALTERNATIVES

Elements of the previous wolf season structure assured that, regardless of the exact quota number adopted by the Commission, safety nets were incorporated so that regulated public hunting would not jeopardize the recovered wolf population. In the same context, the proposed 2010 season structure for both quota options retains many fundamental features from that first season structure. These include:

1. Establishing quotas at a time of year (tentative in May and final in July) so that the most current monitoring data could be considered.
2. Maintain a 1-800 hotline so that hunters would know whether or not wolf harvest was legal (i.e. quota was open) prior to going hunting.
3. Mandatory reporting of successful harvest within 12 hours so FWP can closely monitor hunter success and quota status.
4. Mandatory carcass inspection within 10 days.
5. Closure of the season upon a 24-hour notice when a WMU or subunit quota is filled.
6. FWP authority to initiate a season closure prior to reaching a quota when conditions or circumstances indicate the quota may be reached within 24 hours.
7. Definite season-ending closure date, regardless of whether the quotas were reached.
8. Emergency season closure at any time by order of the FWP Commission.
9. Adopt season structure and quota annually to better adapt and respond.

Other elements proposed for both quota alternatives include:

1. No trapping proposed for the 2010 season.
2. Licenses proposed to remain over-the-counter general sale to residents and nonresidents with total harvest controlled via required reporting of harvest by successful hunters.
3. Any licensed hunter may take only one wolf in the year.
4. The same fourteen WMUs and subquota areas are proposed for both quota options.
5. An archery only season is proposed for all WMUs from September 4, 2010 until 20% of the WMU quota or subquota is met but ending no later than October 17, 2010.
6. A backcountry rifle season is proposed to run from September 15, 2010 until the WMU quota or subquota is met but ending no later than December 31, 2010. This backcountry rifle season is proposed for WMU 150, deer/elk hunting district 280 portion of WMU 290 (subquota of 3) and deer/elk hunting district 316 portion of WMU 390 (subquota of 3).
7. The general rifle season for all WMUs with remaining unfilled harvest quotas/subquotas is proposed to run from October 23, 2010 until the total WMU quota or subquota is met but ending no later than December 31, 2010. A December end date reflects intentional management protection during wolf dispersal in early winter months of January and February. The 25% quota cap on December harvest that was applied in 2009 is not proposed for 2010.
8. Any wolf license purchased during an open season is proposed to not be valid until 5 days from the day of purchase. This would make the sale of wolf licenses consistent with the sale of bear and lion licenses in an Enforcement effort to address potential illegal harvest prior to license purchase (see additional justification provided).

All other season elements not specifically noted are proposed to be unchanged from 2009.

Table 1. 186 QUOTA ALTERNATIVE: Proposed 2010 statewide quota of 186, partitioned into proposed 14 individual WMUs (Legal Descriptions in Appendix I).

Wolf Management Unit	Proposed 2010 Quota
Northwest Montana	
Purcell – WMU 100	18
Salish – WMU 101	22
North Fork Flathead – WMU 110	2
Lower Clark Fork – WMU 121	19
Flathead – WMU 130	9
Bob Marshall – WMU 150	5
Lower Clark Fork – WMU 200	22
Blackfoot – WMU 290 (subquota of 3 in deer/elk HD 280)	15
Northcentral – WMU 400	10
Northwest Montana Total	122
Western Montana	
Bitterroot/Upper Clark Fk – WMU 210	21
Big Hole/Tendoy – WMU 300	5
Western Montana Total	26
Southwest Montana	
Highlands/Tobacco Roots/Gravelly/Snowcrest – WMU 320	8
Gallatin/Madison – WMU 310	15
Southcentral Montana (subquota of 3 in deer/elk HD 316) – WMU 390	15
Southwest Montana	38
STATEWIDE TOTAL	186

Table 2. 216 QUOTA ALTERNATIVE: Proposed 2010 statewide quota of 216, partitioned into proposed 14 individual WMUs (Legal Descriptions in Appendix I).

Wolf Management Unit	Proposed 2010 Quota
Northwest Montana	
Purcell – WMU 100	20
Salish – WMU 101	23
North Fork Flathead – WMU 110	2
Lower Clark Fork – WMU 121	24
Flathead – WMU 130	12
Bob Marshall – WMU 150	5
Lower Clark Fork – WMU 200	22
Blackfoot – WMU 290 (subquota of 3 in deer/elk HD 280)	15
Northcentral – WMU 400	10
Northwest Montana Total	133
Western Montana	
Bitterroot/Upper Clark Fk – WMU 210	26
Big Hole/Tendoy – WMU 300	5
Western Montana Total	31
Southwest Montana	
Highlands/Tobacco	
Roots/Gravelly/Snowcrest – WMU 320	10
Gallatin/Madison – WMU 310	20
Southcentral Montana (subquota of 3 in deer/elk HD 316) – WMU 390	22
Southwest Montana Total	52
STATEWIDE TOTAL	216

Historical Perspective, Proposal Development and Biological Context

Historical Perspective and Proposal Development

Wolf recovery in the northern Rocky Mountains (NRM) has been underway since the late 1980s. The biological recovery criteria were first achieved in 2002. The U.S. Fish and Wildlife Service (USFWS) first delisted the gray wolf from the federal Endangered Species Act (ESA) throughout the northern Rockies in February 2008. That decision was challenged in federal court and a requested injunction was eventually granted in July 2008. After reviewing the court order, USFWS eventually withdrew the decision. The combined actions of the court and the USFWS “relisted” the gray wolf under federal law. USFWS opted for additional agency review and public comment on an alternative delisting approach in the latter half of 2008. Also during the latter half of 2008, the states of Montana and Idaho finalized a Memorandum of Understanding for the Protection of Genetic Diversity of Northern Rocky Mountain Gray Wolves. On May 4 2009, wolves were officially delisted a second time.

On June 2 2009, a lawsuit challenging the second delisting was filed in Federal District Court in Missoula by a coalition of 13 environmental and animal rights groups. Another separate lawsuit challenging the USFWS delisting criteria was filed shortly after in the same court by the Greater Yellowstone Coalition. While the two groups have their own attorneys, both cases were consolidated in the Missoula District Court under Judge Molloy. Their complaints allege the NRM wolf population is not recovered and that the delisting violates ESA for many legal reasons, including delisting cannot occur without an adequate Wyoming regulatory framework approved by the U.S. Fish and Wildlife Service (which it currently does not). Montana has intervened as a party to defend the delisting decision.

In the latter half of 2008, FWP also completed an administrative rulemaking process. The Commission approved final rules in September 2008. These administrative rules took effect on May 4, 2009 immediately upon delisting. The gray wolf was then reclassified by the rule as a species in need of management; furthermore, Montana Administrative Rules and state laws replaced federal regulations. Thus, the Commission has the authority to establish and regulate public harvest for wolves as a species in need of management. The FWP Commission has previously reviewed Montana’s Wolf Conservation and Management Plan and concurred with its direction and approach.

Despite legal challenges, the FWP Commission adopted a final wolf hunting season structure for the biennium (fall 2008 and 2009) in February 2008. It was based on a quota system in which the number of wolves that could be legally harvested is pre-determined and finalized on an annual basis. During its development, FWP and the Commission explicitly considered wolf biology (e.g. dispersal, mortality sources levels, reproduction, disease etc.) as well as wolf-livestock conflict resolution, and regional-scale topics such as connectivity and genetic exchange. Season dates, methods of take, wolf management unit delineation, and harvest limits were grounded in knowledge of wolf ecology in Montana and the published literature at the time the regulations were finalized. The wolf hunting regulations are also based on principles of fair chase (e.g. wolves could not be chased with motorized vehicles or purposefully baited to a site and killed).

Among other parameters, the Commission approved three Wolf Management Units (WMUs) and provided the mechanism during the annual quota setting process to define smaller, specific areas (subunits) that have specific harvest subquotas that apply towards the larger WMU total quota. The season structure approved by the Commission in February 2008 did not include trapping. Thus, for both 2008 and 2009, no special trapping permits were offered. In the absence of trapping, the total wolf harvest quota would be allocated to a fair chase hunting season that closes December 31 or when the WMU quota is reached, whichever is sooner. Supporting information documents were provided to the Commission as a part of that decision process.

In June 2008, FWP recommended and the FWP Commission approved a tentative statewide wolf quota of 75 wolves. That total conservative quota of 75 was partitioned out to establish a quota for each of three WMUs and the North Fork subunit, respectively. FWP received public comment on that tentative quota. Thorough supporting information documents were prepared and provided to the Commission at that time. However, the court-ordered injunction was issued on July 18, just prior to pending FWP Commission final action on a 2008 quota. The injunction rendered fruitless any further consideration of a fall 2008 season and final quotas by FWP and the Commission.

While no quotas were adopted, no licenses were sold and no season occurred in 2008, the Commission received information about how FWP approached its wolf quota recommendation using a model that simulated harvest. FWP ran the model using 2008 wolf population data to provide insight into the predicted effects an initial harvest season would have on the wolf population at the end of the calendar year of the harvest. Supporting information documents were provided to the Commission. This model recognizes and accommodates all known sources of mortality to include livestock depredation removals at levels documented previously. It also recognizes and accommodates reproduction and immigration at levels documented previously.

Still within the same adopted 2008-2009 season structure, on May 14 2009 FWP proposed a range of tentative wolf quotas for a fall 2009 hunting season ranging from zero (no harvest) to 207 at the statewide level, with individual quotas in each of the three WMUs. The FWP Commission adopted a range of tentative statewide quotas of 26-165 after discussion and public comment. The same model developed in 2008 predicted an increasing population (after harvest) from 2008 to 2009 for the entire range being considered. The levels of population increase get progressively smaller as the quota number increases. Supporting information documents were provided to the Commission.

After receiving considerable public inputs, an intentionally conservative quota of 75 wolves was eventually adopted for the 2009 season. Four backcountry areas began hunting on September 15, 2009 and all hunting concluded statewide on November 16 with a legal harvest of 72 animals. At the end of 2009, FWP documented a minimum of 524 wolves and 37 breeding pairs (Sime et al. 2010). This represents approximately 4% growth from 2008 and compares with 18% growth from 2007 to 2008. A minimum of 166 pups survived to December 31, 2009 and were documented (Sime et al 2010).

For developing a proposed 2010 harvest quota, FWP has completed the following process. In addition to maintaining the statewide modeling effort as an important input to quota setting (model supplemental information in separate supporting document), FWP assigned regional staff the task of

assembling regional inputs to season structure and quotas based upon regional circumstances to include wolf biology and relationships with livestock and prey. This was done to enhance the sensitivity to and opportunity for local inputs in a manner that best fosters ground-based conservation support for the wolf itself. In this light, regional inputs called for a general reduction in wolf numbers reasonably within the flexibility of the species biology and recovery requirements.

The FWP preferred alternative (and updated Wolf Council alternative 2) in the 2003 Montana Gray Wolf Conservation and Management Plan Final EIS (August 2003) predicted a range of 328 – 657 wolves by 2015. In a tribute to the species' growth potential under a continued federally-listed and ESA-protected status until spring 2009, the wolf population has increased and is at or near the upper reaches of that range well inside of the predicted timeline. Again from the Montana plan, the same alternative identifies no administrative caps but that wolves would be “.....managed adaptively in keeping with solid principles of wildlife management and the factors affecting social tolerance.”

The internal procedural step of structured decision making (SDM) was used to identify wolf management units (WMUs) for the 2010 hunting season. SDM consists of 5 steps arranged in an iterative sequence: define the Problem, identify Objectives that would characterize successful resolution of the problem, develop management Alternatives to meeting those objectives, identify Consequences for each of the alternatives, and evaluate Trade-offs among the alternatives. This two-day effort included regional and Helena staff across multiple positions and bureaus and culminated in the development of a specific problem statement specific to the 2010 season setting process, a list of prioritized objectives and fourteen (14) different wolf management units. While a summary of this effort is provided elsewhere, the products are listed here.

Problem Statement from SDM process

FWP must propose a 2010 wolf harvest strategy that maintains a recovered and connected wolf population, minimizes wolf-livestock conflicts, reduces wolf impacts on low or declining ungulate populations and ungulate hunting opportunities, and effectively communicates to all parties the relevance and credibility of the harvest while acknowledging the diversity of values among those parties.

Objectives from SDM process

1. *Maintain a viable and connected wolf population in Montana.*
2. *Gain and maintain authority for State of Montana to manage wolves.*
3. *Maintain positive and effective working relationships with livestock producers, hunters, and other stakeholders.*
- 4a. *Reduce wolf impacts on livestock.*
- 4b. *Reduce wolf impacts on big game populations.*
- 4c. *Maintain sustainable hunter opportunity for wolves.*
- 4d. *Maintain sustainable hunter opportunity for ungulates.*
5. *Increase broad public acceptance of sustainable harvest and hunter opportunity as part of wolf conservation.*

6. *Enhance open and effective communication to better inform decisions*
7. *Learn and improve as we go.*

Biological

At the statewide level, at least 15 BPs statewide are required to offer any public hunting and trapping opportunities (2003 Montana Gray Wolf Conservation and Management Plan Final EIS August 2003). Managing for higher wolf numbers affords a greater degree of flexibility when addressing wolf-livestock conflicts, allows for higher levels of public harvest opportunity, and buffers any unexpected environmental events such as weather-induced prey declines or disease / parasites in the wolf population without jeopardizing population viability and species recovery. Harvest needs to be implemented in such a way that accounts for the dynamic aspects of conflict management and wolf population ecology.

The Montana wolf plan outlines an adaptive management framework, through which FWP will work to integrate gray wolves into the natural and human landscapes (Montana Fish, Wildlife & Parks 2003). Wolves will be conserved and managed in conjunction with Montana's other resident wildlife. As a part of that, FWP and the FWP Commission can consider implementing a wolf hunting season so long as there are at least 15 breeding pairs in the state. At the end of 2009, FWP documented a minimum of 37 breeding pairs (Sime et al. 2010).

With recolonization and the subsequent reintroduction of wolves into Yellowstone National Park and the central Idaho wilderness, the number of wolf packs in Montana has increased and wolf pack distribution has expanded. The typical and most influential mechanism to increase wolf numbers and distribution is dispersal and formation of new packs in new places. Based on data gathered from radio-collared wolves, the average dispersal distance is about 60 miles. Wolves have been documented to disperse twice that distance (120 miles) and even longer. The longest distance dispersers (>180 miles) had significantly lower survival and most did not breed.

To simulate dispersal in any direction from the geometric center of wolf pack territories from 1989 to 2008, FWP did some exploratory mapping. FWP buffered the geometric center by 10-mile increments and delineated a line where the Northwest Montana and the central Idaho wolf packs appear to be within 60 miles of wolf packs in the Greater Yellowstone area. The line is buffered and shaded on either side to display the average dispersal distances of 60 and 120 miles (Figure 1).

Dispersal has another important biological function – namely to maintain genetic diversity in a wolf population. The gray wolf has a very strong inherent tendency to “outbreed” and will thus seek to breed with unrelated individuals. Figure 2 shows the origin and end point of dispersing radio-collared wolves in the northern Rocky Mountains from 1995-2005.

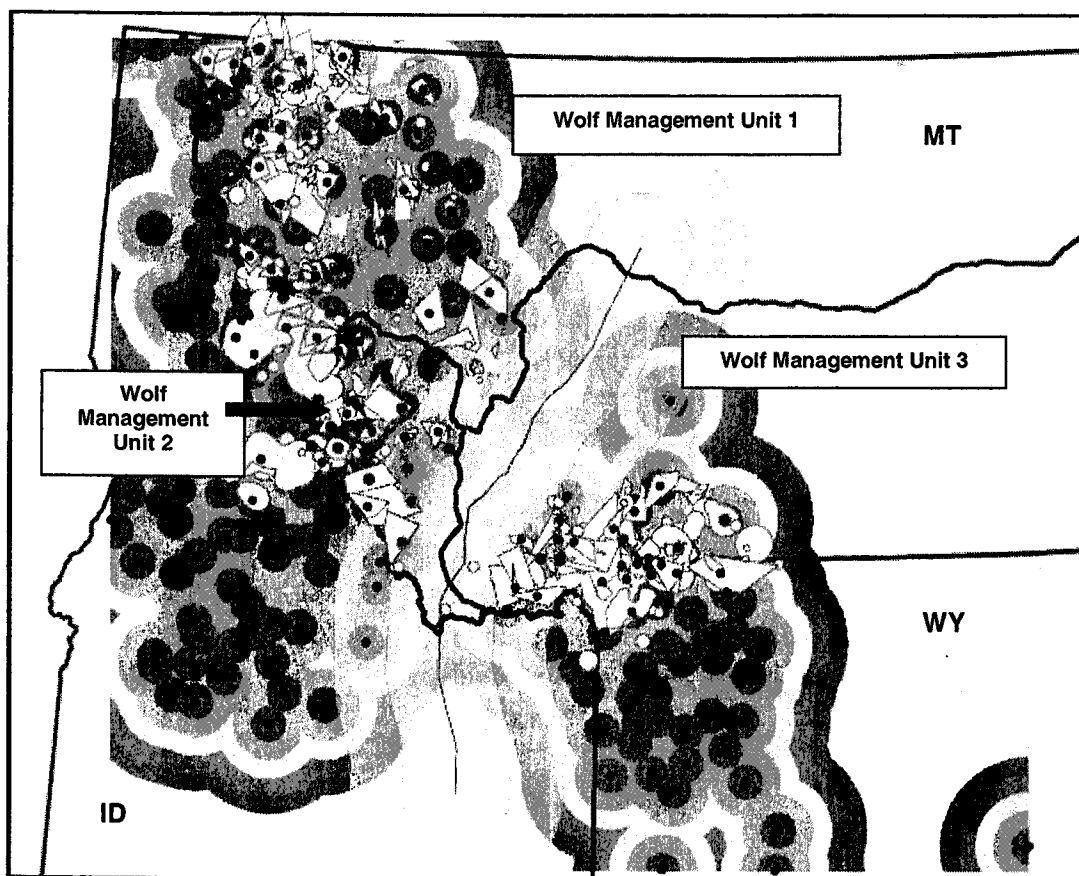


Figure 1. Map of wolf pack territories from 1989-2007 (teal colored shapes) and 2008 wolf pack territories (smallest dots) in Montana and near the state borders showing the geometric center buffered by 10-mile increments to simulate wolf dispersal in 360 degrees from the center. The line and shaded portion separating the Northwest Montana and central Idaho subpopulations from the Greater Yellowstone subpopulation depicts the average dispersal distance of 60 miles (30 miles on either side of the line) and two times the average or 120 miles (60 miles on either side of the line).

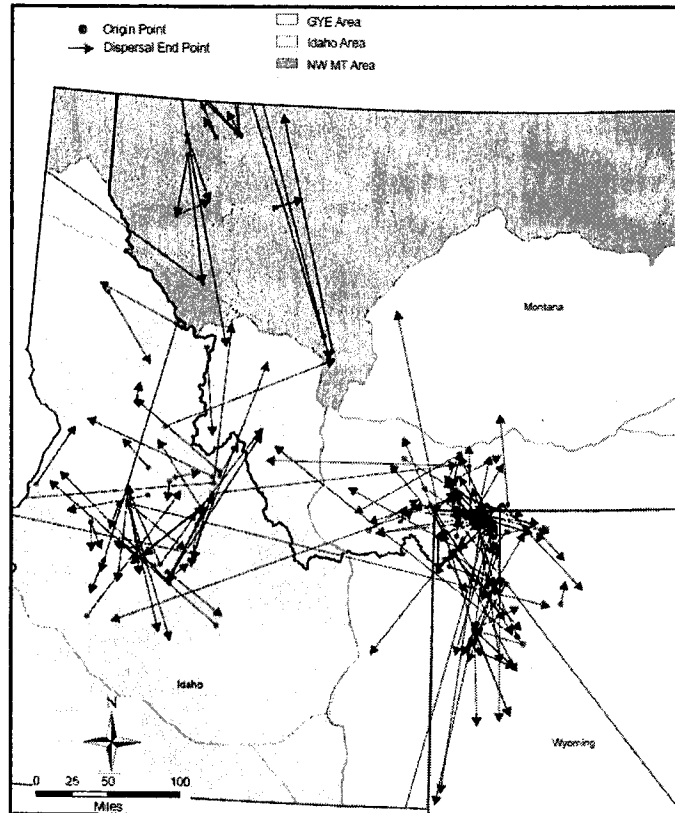


Figure 2. Map of the origin and end points of radio collared wolves dispersing in the northern Rocky Mountain federal recovery area, 1995-2005.

Review of Proposed Season Structure and Quotas

FWP has typically reported wolf numbers as the year-end total number of known wolves, packs and BPs. These represent a *minimum number* and likely under-represents the total number of wolves by 10-30%, depending upon the size of the wolf population, terrain, vegetation (i.e., sightability) and monitoring effort.

One output of the model used to evaluate impact of harvest is the *total predicted* number of wolves at the end of each year. Therefore, readers are advised to pay attention to whether the numbers being reported are the *minimum* number obtained through field-based monitoring efforts or the *predicted* number obtained through the modeling exercise.

Given that model's output of total *predicted* wolves already includes an added 10% to account for lone wolves not associated with any pack, FWP determined the percent change in wolf population associated with the proposed quota options by comparing the model's 2010 year-end number of pack-living wolves with the 2009 known minimum number of pack-living wolves of 506 [which is equal to 524 (the minimum total number of wolves observed at the end of 2009) minus 18 (the minimum number of lone wolves observed at the end of 2009)]. FWP took this

approach because it believes the observed number of lone wolves at the end of 2009 is biased low, but the degree is unknown. Thus, FWP compares 2010 predicted pack-living wolves post-season to 2009 pack-living wolves observed through field-based methods to evaluate harvest effects on the population trajectory.

One intentional feature of the current model is that it is run annually with the most recent yearly monitoring data as its inputs. A model run with the most recent inputs and with no harvest predicts a 2010 total *predicted total* number of wolves to be 667 wolves (or 600 pack-living wolves).

186 Quota Alternative

A total statewide quota of 186 wolves is the sum quotas of 122, 26 and 38 respectively in northwest Montana, western Montana and southwest Montana (Table 3). On a statewide scale, this 186 quota represents an approximately 28% harvest rate applied by the model. This in contrast to the approximate 15% statewide harvest rate (75 wolf quota) applied in 2009.

This harvest rate is well within the range of sustainable harvest rates based on the literature and the current Montana wolf population (Fuller et al. 2003; Sime et al. 2010). The model predicts that a harvest equal to this proposed quota level of 186 would reduce the year-end *minimum* total pack-living wolf numbers approximately 13% from 506 in 2009 to an estimated 439 in 2010 (Table 3). That is, FWP would expect to document 439 pack-living wolves at the end of 2010 using the same monitoring methods as were used in 2009. These numbers of pack-living wolves do not include lone wolves that are also recorded in year-end minimums. Across 1000 model simulations the model predicted 26 breeding pairs and no run produced a predicted statewide breeding pair count less than 19.

216 Quota Alternative

A total statewide quota of 216 wolves is the sum quotas of 133, 31 and 52 respectively in northwest Montana, western Montana and southwest Montana (Table 4). On a statewide scale, this 216 quota represents an approximately 32% harvest rate applied by the model. This in contrast to the approximate 15% statewide harvest rate (75 wolf quota) applied in 2009.

This harvest rate is well within the range of sustainable harvest rates based on the literature and the current Montana wolf population (Fuller et al. 2003; Sime et al. 2010). The model predicts that a harvest equal to this proposed quota level of 216 would reduce the year-end minimum total pack-living wolf numbers approximately 20% from 506 in 2009 to an estimated 403 in 2010 (Table 4). That is, FWP would expect to document 439 pack-living wolves at the end of 2010 using the same monitoring methods as were used in 2009. These numbers of pack-living wolves do not include lone wolves that are also recorded in year-end minimums. Across 1000 model simulations the model predicted 24 breeding pairs and no run produced a predicted statewide breeding pair count less than 15.

Both quota alternatives are tied to regional efforts that first independently constructed quota levels without the model's assistance. Those regional efforts can be generally described as using average growth rates, breeding pairs, estimated sightability and/or documented pup production and survival rates to predict growth and develop quotas intended to either maintain or reverse population growth at the individual WMU scale. Population maintenance was applied in areas with little or no livestock depredations/prey concerns or in areas where significant population reductions have recently taken place (or are currently taking place) via lethal removal for livestock depredations. Population reversal was variably guided from one WMU to another by the local/regional intent to initially return to 2008 wolf levels and/or achieve a lower ratio of wolves to prey (elk). Products of these regional efforts were then compared to the model outputs with adjustments made in response to the risk assessment provided by the model.

Under the 186 harvest scenario, across 1000 model simulations the model predicted 26 breeding pairs and no simulation resulted in a predicted statewide breeding pair count less than 19. Under the 216 harvest scenario, across 1000 model simulations the model predicted 24 breeding pairs and no simulation resulted in a predicted statewide breeding pair count less than 15.

Both Quota Alternatives

For both quota proposals, the harvest quotas proposed in northwest Montana (combined WMUs 100, 101, 110, 121, 130, 150, 200, 290 and 400) are higher than in western Montana and southwest Montana because of the relative and absolute strong population growth there. Northwest Montana had the greatest number of wolves and wolf packs of any area. With 308 total *minimum* wolves at the end of 2009, this area recorded 59% of the statewide total minimum number of wolves in 2009. The quota allocation across the nine WMUs in FWP administrative regions 1, 2, 4, 6 and 7 is a product of regional assessments of relative wolf presence and circumstances. This regional allocation occurs in the other recovery areas as well. No individual WMU within any recovery area is prescribing a zero wolf presence.

FWP is proposing the lowest harvest quotas for western Montana. This quota is proposed to be allocated across WMUs 210 and 300 in parts of FWP regions 2 and 3. While this area's proximity to a robust wolf population in central Idaho with the likelihood of immigration, recent and ongoing wolf removals for livestock depredations in the upper Big Hole have significantly reduced wolf numbers since January 2010. Of note is the relative small number of minimum breeding pairs in this area in the last few years (Sime et al. 2010). While the mean breeding pair prediction for the recovery area for both quota proposals was two (2), the lower 95% confidence limit did reach zero. This area bears careful monitoring for dynamic and evolving circumstance in Montana and Idaho alike.

The harvest quota for southwest Montana lies between the northwest Montana and western Montana quotas and is proposed to be allocated across WMUs 310, 320 and 390 within FWP administrative regions 3, 4, 5 and 7. This area receives wolves from Yellowstone National Park historically, though the rate may slow down in the future as the YNP population dropped below 100 at the end of 2009 (USFWS 2010). The Montana portion of the Greater Yellowstone area is critical in the consideration of connectivity to wolves further to the west and north at the regional, meta-

population scale. Model simulations produced mean predicted breeding pairs of seven (7) and eight (8).

Table 3. 186 QUOTA ALTERNATIVE: Proposed 2010 statewide 186 quota by area, 2009 year-end *minimum* total pack-living wolf numbers and breeding pairs and *predicted* 2010 year-end total wolf numbers and breeding pairs based upon model harvest simulations of proposed quotas (expected 2010 *minimum* total pack living wolves in parenthesis).

Quota Area /2009 WMU/2010 WMUs	Proposed 2010 Quota (2009 quota in parenthesis)	2009 Minimum Total Pack Living Wolves and Breeding Pairs (BPs) (Sime et al 2010)	Model-Predicted 2010 Year End Total Wolves and BPs (Expected 2010 Minimum Total Pack Living Wolves in Parenthesis)
Northwest Montana 2009 WMU 1 Proposed 2010 WMUs 100-101-110-121-130- 150-200-290-400	122 (2009 quota = 41)	2009 min pack living wolves = 297 2009 min BPs = 23	Predicted 2010 year end wolves = 328 (295) Predicted 2010 year end BPs = 16
Western Montana 2009 WMU 2 Proposed 2010 WMUs 210-300	26 (2009 quota = 22)	2009 min pack living wolves = 103 2009 min BPs = 5	Predicted 2010 year end wolves = 60 (54) Predicted 2010 year end BPs = 2
Southwest Montana 2009 WMU 3 Proposed 2010 WMUs 320-310-390	38 (2009 quota = 12)	2009 min pack living wolves = 106 2009 min BPs = 9	Predicted 2010 year end wolves = 100 (90) Predicted 2010 year end BPs = 8
STATEWIDE TOTAL	186 (2009 quota = 75)	2009 min pack living wolves = 506 2009 min BPS = 37	Predicted 2010 year end wolves = 488 (439) Predicted 2010 year end BPs = 26*

* After 1000 model simulations of the proposed quotas, no runs produced less than 19 breeding pairs statewide.

Table 4. 216 QUOTA ALTERNATIVE: Proposed 2010 statewide 216 quota by area, 2009 year-end *minimum* total pack living wolf numbers and breeding pairs and *predicted* 2010 year-end total wolf numbers and breeding pairs based upon model harvest simulations of proposed quotas (expected 2010 minimum total pack living wolves in parenthesis).

Quota Area /2009 WMU/2010 WMUs	Proposed 2010 Quota (2009 quota in parenthesis)	2009 Minimum Total Pack Living Wolves and Breeding Pairs (BPs) (Sime et al 2010)	Model-Predicted 2010 Year End Total Wolves and BPs in Montana Portion of Recovery Area (Expected 2010 Minimum Total Pack Living Wolves in Parenthesis)
Northwest Montana 2009 WMU 1 Proposed 2010 WMUs 100-101-110-121-130- 150-200-290-400	133 (2009 quota = 41)	2009 min pack living wolves = 297 2009 min BPs = 23	Predicted 2010 year end wolves = 302 (272) Predicted 2010 year end BPs = 15
Western Montana 2009 WMU 2 Proposed 2010 WMUs 210-300	31 (2009 quota = 22)	2009 min pack living wolves = 103 2009 min BPs = 5	Predicted 2010 year end wolves = 55 (49) Predicted 2010 year end BPs = 2
Southwest Montana 2009 WMU 3 Proposed 2010 WMUs 320-310-390	52 (2009 quota = 12)	2009 min pack living wolves = 106 2009 min BPs = 9	Predicted 2010 year end wolves = 91 (82) Predicted 2010 year end BPs = 7
STATEWIDE TOTAL	216 (2009 quota = 75)	2009 min pack living wolves = 506 2009 min BPs = 37	Predicted 2010 year end wolves = 448 (403) Predicted 2010 year end BPs = 24*

* After 1000 model simulations of the proposed quotas, no runs produced less than 15 breeding pairs statewide.

Summary

To summarize, the combination of the wolf season structure and the proposed final quotas reflect efforts to meet objectives identified in the SDM process described above.

These are:

1. Maintain a viable and connected wolf population in Montana.

Both quota alternatives look to maintain the current overall distribution of wolves albeit at a reduced level.

2. Gain and maintain authority for State of Montana to manage wolves.

Of 1000 simulations for each proposed quota, no individual simulation produced less than 15 breeding pairs statewide.

3. Maintain positive and effective working relationships with livestock producers, hunters, and other stakeholders.

Current wolf levels are well above conservation minimums. The proposed reduction maintains species distribution and viability while recognizing growing sentiment among some publics for a reduced wolf presence. It also seeks to recognize and balance an awareness that other publics seek a greater wolf presence.

4a. Reduce wolf impacts on livestock.

While it is not clear exactly what relationship will evolve between hunter harvest and any reduction in livestock depredations, given the history of wolves and depredation events it is reasonable to assume that some reduction to a previous population level stands to potentially reduce livestock depredations. Additionally, hunter harvest has some unknown potential to literally and directly curtail or prevent livestock loss or agency response to that loss at a local scale.

4b. Reduce wolf impacts on big game populations.

FWP's commitment to wolf is no less than its commitment to other wildlife and is adaptively pursuing a balance that accommodates all species' biology and population status.

4c. Maintain sustainable hunter opportunity for wolves.

Consistent with all managed wildlife species, FWP wolf management is grounded in the statutory direction and agency intent to prevent relisting and to provide species viability and presence and associated public opportunities in perpetuity.

4d. Maintain sustainable hunter opportunity for ungulates.

This proposed reduction in wolf numbers reflects concern over ungulate populations but does not dismiss the value of the wolf, its biological needs and its ecological role.

5. Increase broad public acceptance of sustainable harvest and hunter opportunity as part of wolf conservation.

This proposal looks to keep hunters and livestock producers supportive of wolves in Montana and recognizes that without the elements of hunter harvest the wolf cannot be widely supported in the state. It also looks to demonstrate Montana's careful consideration of wolf population data as the basis for proposing two quota options for the Commission to consider.

6. Enhance open and effective communication to better inform decisions.

Staff efforts in this proposal development have exceeded usual proposal development process. The modeling simulations and other information will be proactively made available to decision makers and to others upon request. A single night of public meetings in each of the seven FWP administrative regions will assist all parties in understanding any Commission adoption and how to engage the public comment opportunity.

7. Learn and improve as we go.

Given current uncertainties associated with a relatively short history of wolf management with hunting on the Montana landscape, the present high and growing dissatisfaction with the current wolf population level by some segments of the public and the specie's reproductive ability to grow and/or rebound, it is paramount that FWP move forward in decisive fashion that clearly prescribes actions with predictions that can be recognized, measured and responded to. Season adoptions are scheduled to be annual rather than biennial to better adapt to evolving management understanding.

FWP has carefully considered the need to continue wolf harvest and management in light of uncertainty. There are many sources of uncertainty, including the fact that wolves do not have a long history (only one year) of being hunted in Montana as a managed species through fair chase and regulated means. Further, FWP does not yet have a reliable way to predict participation, hunter success, wounding loss, spatial distribution of harvest, and wolf vulnerability to harvest. All are currently laden with assumptions, with no way of validating them until after the fact. Mechanisms are in place through mandatory harvest reporting, pelt / skull inspection, and the annual telephone harvest survey to gather new information about wolf hunting and to fully assess these unknowns.

Some insight can be gleaned from the published literature, though the findings vary with the study area and management framework. A wolf population can generally withstand a range of about 30-50% total human-caused mortality and remain relatively stable, depending on a variety of variables and environmental conditions. The overall size of the population from which wolves are removed and the size and proximity to other populations appear to be particularly important considerations. Mortality levels exceeding 50% are generally required to initiate a population

decline. Other important factors highlighted in the literature include: overall wolf density and population size, pup survival, immigration / emigration rates at local and regional scales, the size and proximity of other wolf populations, the size and juxtaposition of core protected areas having low levels of human-caused mortality, road density, habitat condition, degree of habitat fragmentation, other non-harvest mortality (e.g. lethal control), prey populations, and livestock density (Fuller et al. 2003; Oakleaf et al. 2006, Person and Russell 2007; Brainerd et al. 2008; Adams et al. 2008).

FWP efforts are already underway to refine and improve its model and develop mechanisms imbedded in the modeling process itself to learn more about wolf population dynamics in conjunction with public harvest and conflict management. Subsequent population monitoring efforts and better models within the adaptive management framework will allow FWP and others to improve knowledge and reduce the level of uncertainty as more experience is gained through time.

2. Why is the proposed change necessary?

In response to growing wolf numbers, impacts to livestock and prey populations (deer/elk/moose) and associated growing concern among some public constituents, FWP is proposing a higher wolf quota for 2010. The intent of this increased quota is to cap and reverse wolf population growth by an estimated 13 – 20%.

Additional management units are proposed to direct the harvest potential in prescribed (active rather than passive) fashion. This season element along with the separate backcountry WMU quotas/subquotas and the 20% limit on archery-only harvest are in direct response to the 2009 hunting season circumstance where the significant majority of harvest came in the backcountry unit of deer/elk HD 316.

FWP further expects to expand understanding about the level of hunter interest in harvesting a gray wolf, the extent to which wolves on the Montana landscape are and remain vulnerable to harvest, how successful Montana hunters will continue to be, and how the population continues to respond. The adaptive management framework and the Commission season setting process will allow FWP to adjust the season structure / quotas in the future. To best facilitate this adaptive process, FWP will develop and propose wolf seasons and quotas again in 2011 for the 2011 season.

Regulated public hunting as a wildlife management tool helps to balance wildlife populations with ecological and social carrying capacities. Moreover, fair chase, regulated public hunting will enhance acceptance of wolves because the public will more fully participate in wolf management. This, in alignment with the public's conservation ethic and the state's hunting heritage and tradition, will ultimately develop an additional constituency through time much in same way as witnessed for mountain lions. Initiating a larger public harvest at this time gives FWP the opportunity to continue to build invaluable experience with a new and necessary management tool. It is FWP's expectation that public harvest will help fine tune wolf numbers and distribution, which may provide some relief in areas prone to chronic wolf-livestock conflicts. It will also provide some relief to prey populations (deer / elk) in areas where predation by a variety of carnivores has contributed to low recruitment.

3. What is the current population's status in relation to management objectives?

The Montana wolf population is securely recovered, though dynamic. As of December 2009, the most recent total *minimum* wolves for Montana was 524 wolves in 101 packs, 37 of which were breeding pairs (Sime et al. 2010). The statewide population has trended upward since the mid 1980s and most noticeably since 2004. Some of that increase is probably actual population increase and part is likely due to increased monitor efforts by FWP compared to previous USFWS efforts.

Recent population increases have occurred even with an estimated average total annual mortality rate of about 30% in Montana from 2005-2008 based on a radio-collared sample. The rate of wolf population growth in Montana appears to be slowing down as the highest quality habitats with the lowest potential for conflicts are occupied. Previous annual increases have been in the 20-35% range year to year, but the most recent increases from 2007 to 2008 was 18% and from 2008 to 2009 was 4%. This 4% increase from 2008 to 2009 was realized even with additional mortality represented by hunter harvest applied at an average statewide harvest rate of approximately 15%.

The current and predicted number of breeding pairs is above the 15 breeding pairs required to offer harvest opportunity. Furthermore, the total number of wolves and the number of breeding pairs are also above levels which could trigger relisting under ESA.

While clear numerical objectives at local or larger scales can ultimately be an asset to management direction and efforts, FWP has not solidified such numerical objectives while in pursuit of better understanding of wolf response to various mortality rates, hunter effectiveness and wolf relationships to livestock and natural prey on the Montana-specific landscape. Such improved understanding stands to come from completed, ongoing and planned formal research and continued applied adaptive management, including hunting. Fifteen (15) breeding pairs (BPs) [and 150 wolves] is not a minimum or maximum but rather is used to "signal a transition" between liberal and conservative management strategies. Quota levels were selected out of the modeling exercise that best matched regional and program inputs, concerns and reasonably accounted for uncertainties and risk. More broadly, the season structure, quotas and overall process were guided by the objectives identified in an intentional and facilitated structured decision making process describe here.

FWP is aware that the proposed quota options predict a population decline from 2009 to 2010. Managing for lower wolf numbers that are still above the minimum requirements in only the second year after delisting is prudent given the significant and growing resistance to wolf numbers by some members of the public, livestock depredations and impacts to prey populations. As wolf numbers have increased, so has the level of confirmed wolf-caused livestock losses and the number of wolves killed to resolve conflicts (Sime et al. 2010). And it appears that in some places, total predation to include wolf predation has been a factor in prey population dynamics (Hamlin and Cunningham 2009). Thus, harvest needs to be implemented in such a way that accounts for the dynamic aspects of conflict management, wolf population ecology, prey populations, other predator populations and all the social factors surrounding wolf management.

4. Provide information related to weather/habitat factors that have relevance to this change.

Continuation of a wolf hunting season will help FWP manage and fine-tune wolf numbers and distribution more proactively. Anecdotal evidence over the last several years seems to indicate that larger packs may have a greater tendency to injure or kill domestic livestock than when the same pack had fewer members. FWP believes that public hunting (and trapping at some future date) will help maintain smaller pack sizes for those packs which routinely encounter livestock and live on or near private lands. It may even completely remove packs that are chronic sources of conflict.

An additional consideration when adopting harvest quotas is Montana's "defense of property" law that allows a person to haze, harass, or kill a wolf seen actively attacking, killing, or threatening to kill or killing livestock. The defense of property statute (MCA 87-3-130) and new ARM rules took effect upon delisting when federal regulations expired. The flexibility afforded under state law is similar to the federal 10j experimental regulations that applied to southern Montana since 2005. Thus delisting and transitioning to the state legal framework does not create more liberal means for private citizens to kill wolves caught in the act attacking, killing, or threatening to kill livestock across southern Montana where most livestock conflicts occur. The current modeling effort would have already taken that mortality into account.

Transition to state law does provide new flexibility to livestock owners across northern Montana. Under the federal regulations in the endangered area, livestock owners did not have that flexibility. While some of Montana's highest livestock densities, thus most wolf-livestock conflicts occur in southern Montana, wolf packs across northern Montana can and do encounter livestock. FWP acknowledges that a small number of wolves could be killed when caught in the act of killing or threatening to kill livestock. The number is expected to be similar to southern Montana and FWP will learn over time what additional mortality will consistently appear in northwest Montana.

Weather-initiated declines in white-tailed deer populations in northwest Montana have triggered public concern about the level of predation by wolves and mountain lions. Similar public concerns about predator numbers in other areas have also been raised by deer, elk and moose hunters and some landowners. Prey declines due to the combination of weather, habitat, predation, and human harvest led FWP to decrease hunter opportunity in some places in occupied wolf range. Many of these areas also support resident black and/or grizzly bears, mountain lions, coyotes, and other predatory carnivores. In conjunction with lower human harvest levels of deer, elk and moose, the 2010 proposed wolf season quotas may provide some initial relief to these prey populations as environmental conditions improve.

5. Briefly describe concerns with this proposal or contacts made.

Concerns

A new protocol expanding the authorization of initial lethal response by USDA Wildlife Services (WS) was recently put in place as directed by FWP. Designed to increase operational efficiencies while maximizing the likelihood of taking the animal(s) most likely involved in any livestock depredation, this new protocol allows for immediate ground based efforts to take wolves during the first initial response by WS. While adding efficiency relative to communication and authorization efforts, experience to date suggest the revised initial response phase has not resulted in significantly

more wolves being taken by WS during ground based efforts. Lethal removals of depredating wolves have and will continue to influence wolf population levels. As wolf management in Montana continues to include livestock hunter harvest as well as depredation removals, FWP will continue to better understand any relationship between the two sources of mortality.

There has been significant public support to harvest more wolves given wolf biology and sincere concerns about the status of deer/elk populations. There has also been public support to delay any wolf harvest. While appearing to level off, the rate of wolf population increase has been robust and the harvest simulation model predicts population resiliency under higher quotas. As with all such efforts, FWP does acknowledge limitations of the model despite its thoughtful development and an anchor in field-based data.

There has been the public input that FWP should do more to address connectivity requirements for achieving recovery and sustaining a northern Rockies metapopulation given Montana's unique geographic link with wolf populations in Canada / Alaska and the Greater Yellowstone Recovery area (which includes Yellowstone National Park and all of Wyoming). Strong reaction to wolf harvest in 2009 north of Yellowstone National Park prompted a proposed subquota in deer/elk hunting district 316.

FWP is aware that wolf populations in western and southwest Montana are strongly influenced by immigration and wolf dispersal from Idaho and Yellowstone National Park into Montana, respectively. Depending on how those populations perform under their respective management frameworks (in conjunction with natural fluctuations due to prey availability or disease etc.), dispersal rates may be either positively or negatively affected – thus, connectivity may be affected. If so, FWP may need to adjust quotas, create more subunits / subquotas, or change the season structure in the future and is prepared to do so, in conjunction with the Commission.

Genetic diversity in the northern Rocky Mountain wolf metapopulation is currently high and is not a problem. As total mortality increases (e.g. agency control, hunting, disease, stochastic events) and is not offset by sufficient reproduction and adequate survival to breeding age to prevent steep population declines, connectivity and genetic diversity could become concerns. As noted above, more refined management at the quota or subunit / subquota level or even adjustments to the season structure could be implemented. Greater attention could also be placed on application of agency lethal control, increasing field-based monitoring to increase data reliability, along with more careful management of human-caused mortality for packs along the margins of the shaded area depicted in Figure 1. The interagency genetic diversity MOU commits Montana, along with Idaho and the federal government to monitoring protocols that should enable detection of emerging conservation issues.

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Appendix I. Proposed 2010 Legal Descriptions.

Purcell – WMU 100: This WMU lies in the extreme northwest part of the state and is made up of deer and elk HDs 100 and 104.

Salish – WMU 101: This WMU lies in the central part of Region 1 and is made up of deer/elk HDs 101, 102, 103, 109, 120 and a portion of 110.

North Fork – WMU 110: This WMU is the same North Fork sub-unit from 2009 immediately west of Glacier National Park and is a portion of deer/elk HD 110. Beginning on the U.S./British Columbia border west of Frozen Lake, proceeding southerly along the Whitefish Divide to the top of Big Mountain, then proceeding easterly from the top of Big Mountain down Canyon Creek to the North Fork of the Flathead River, then northerly up the middle of the North Fork of the Flathead River to the U.S./British Columbia border, then westerly along the U.S./British Columbia border to the Whitefish Divide, the point of beginning.

Lower Clark Fork – WMU 121: This WMU lies along the lower Clark Fork and Bull Rivers and is made up of deer/elk HDs 121, 122, 123 and 124.

Flathead – Swan – WMU 130: This WMU includes the Swan Valley, non-wilderness portions of the South and Middle Forks of the Flathead River, and the agricultural and urban landscapes of the Flathead Valley and is comprised of deer/elk HDs 130, 132, 140, 141 and 170.

Bob Marshall – WMU 150: This WMU is entirely a wilderness WMU made up of deer and elk HDs 150 and 151 in portions of the Great Bear and Bob Marshall Wildernesses.

Lower Clark Fork -- WMU 200: This WMU is the northwest portion of Region 2 and includes deer/elk HDs 200, 201, 202 and 203.

Bitterroot & Upper Clark Fork -- WMU 210: This WMU is the south and central portion of Region 2 and includes deer/elk HDs 204, 210, 211, 212, 213, 214, 215, 216, 240, 250, 260, 261, 270.

Blackfoot -- WMU 290: This WMU is the northeast portion of the Region w and includes deer/elk HDs 280, 281, 282, 283, 284, 285, 290, 291, 292, 293, 298.

Big Hole-Tendoy – WMU 300: This WMU encompasses that portion of Region 3 south of Interstate 90 and west of Interstate 15. This unit encompasses deer/elk hunting districts 300, 302, 319, 321, 328, 329, 331, 332, 334 and 341.

Highlands-Tobacco Roots -Gravelly-Snowcrest—WMU 320: This WMU encompasses that portion of Region 3 south of Interstate 90, east of Interstate 15 and west of Highway 287 and

Highway 87. This unit encompasses deer/elk hunting districts 320, 322, 323, 324, 325, 326, 327, 330, 333 and 340.

Gallatin-Madison – WMU 310: This WMU encompass that portion of Region 3 south of Interstate 90, east of Highway 287 and Highway 87, and west of the Gallatin/Yellowstone Divide. This unit encompasses deer/elk hunting districts 301, 309 (south of I-90), 310, 311, 360, 361 and 362.

South-Central Montana – WMU -- 390: This WUM encompasses those portions of Silverbow, Jefferson, Lewis & Clark, Cascade, Meagher, Gallatin, Park, Judith Basin, Wheatland, Sweet Grass, Stillwater, Carbon, Golden Valley, Fergus, Petroleum, Musselshell, Yellowstone, Big Horn, Treasure, Rosebud, Garfield, McCone, Prairie, Custer, Powder River, Carter, Fallon, Wibaux, Dawson and Richland Counties within the following boundary. Beginning at the junction of Interstate 90 and Interstate 15 at Butte, then northerly along Interstate 15 to the Continental Divide at Elk Park Pass, then northerly along the Continental Divide to the North Fork of Lyons Creek (northwest of Flesher Pass), then southeasterly down said creek to Interstate 15, then northeasterly along said interstate to the junction with Highway 200, then easterly along said highway to the Montana-North Dakota border, then southerly along said border to the Montana-South Dakota border, then southerly along said border to the Montana-Wyoming border, then westerly along said border to the Montana-Yellowstone National Park boundary, then westerly along said boundary to the Yellowstone-Gallatin River Divide, then northerly along said divide to the Goose Creek Road, then northwesterly along said road to Meadow Creek Road (west of Livingston), then westerly along said road to Interstate 90, then westerly along said interstate to Butte, the point of beginning. This unit encompasses deer/elk hunting districts 309 (north of I-90), 312, 313, 314, 315, 316, 317, 318, 335, 339, 343, 350, 370, 380, 388, 390, 391, 392, and 393 AND all of Region 5, all of Region 7 south of US Hwy 200 and a portion of Region 4 south of US Hwy 200 and east of I-15.

North Central Montana – WMU 400. Those portions of Glacier, Pondera, Teton, Lewis and Clark, Cascade, Chouteau, Judith Basin, Toole, Liberty, Hill, Blaine, Fergus, Petroleum, Phillips, Valley, Garfield, McCone, Richland, Roosevelt, Sheridan, Daniels and Dawson counties within the following described boundary: beginning at the intersection of Interstate Highway 15 and State Highway 200 near Great Falls, then easterly along Highway 200 to the Montana - North Dakota border, then northerly along said border to the Montana – Canada border, then westerly along the Montana – Canada border to its intersection with the continental divide in Glacier National Park, then southerly along said continental divide, through Rogers Pass, to the North Fork of Lyons Creek, then southeasterly down Lyons Creek to Interstate Highway 15, then northerly along Interstate Highway 15 to its intersection with State Highway 200 near Great Falls, the point of beginning.